

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

Listing of Claims

1. (Currently Amended) An audience response determination apparatus for determining an audience response to displayed content, comprising:

~~overall state detection means for producing an image of members of said audience and detecting motion vectors as a function of movement of individual members in said image, information indicative of a respective one of plural response states of said individual members and load information indicative of a respective response load condition of said individual members, thereby estimating the overall response state of an audience;~~

image input means for inputting image signals representing an image of members of said audience;

motion vector determining means for receiving said image signal and determining motion vectors in said image;

sound input means for inputting audio signals representing sounds generated by said .members of such audience;

audio determining means responsive to said audio signals to determine a sound state of said audience;

individual state detection means for detecting individual load conditions of the members of the audience, thereby representing the individual response states of the members of the audience;

auxiliary information means for supplying auxiliary information indicating whether the content currently is displayed and, if so, whether said content is video or audio content and, if video content, said auxiliary information is indicative of a scene in said video content;

determination means for determining the audience response on the basis of ~~the detected overall state of said audience~~ said determined motion vectors, said determined sound state of said audience, the detected load conditions of said members, and said supplied auxiliary information, and

wherein said determination means for determining the audience response comprises an audience state determination unit for estimating if a majority of said audience is intently watching or listening to said content, for estimating if a majority of said audience is clapping or singing along with the content, for estimating if a majority of said audience is clapping or shouting, for estimating if a majority of said audience is applauding or cheering and for estimating if a majority of said audience is standing, and for selecting the audience response as a function of said estimating.

2. (Original) An audience response determination apparatus according to claim 1, wherein said overall state detection means takes an image of the entire audience and detects the overall bodily state of the audience based on the image taken.

3. (Previously Presented) An audience response determination apparatus according to claim 1, wherein said overall state detection means collects sounds uttered by the entire audience and detects the overall state of the audience based on the sounds collected.

4. (Previously Presented) An audience response determination apparatus according to claim 1, wherein the load condition detected by said individual state detection means is a load applied to each of the audience's seats.

5. (Previously Presented) An audience response determination apparatus according to claim 1, wherein the load condition detected by said individual state detection means is a stepping force provided by each member of said audience.

6. (Original) An audience response determination apparatus according to claim 5, wherein said individual state detection means comprises:
first stepping force detection means for detecting a stepping force provided by the left foot of each member of said audience; and
second stepping force detection means for detecting a stepping force provided by the right foot of each member of said audience.

7. (Currently Amended) A playback output control system for controlling the output from playback means for the playback and output of data to be seen or heard by an audience, comprising:

~~overall state detection means for producing an image of members of said audience and detecting motion vectors as a function of movement of individual members in said image, including information indicative of a respective one of plural response states of said individual members and load information indicative of a respective response load condition of said individual members, thereby estimating an overall response state of said audience;~~

image input means for inputting image signals representing an image of members of said audience;

motion vector determining means for receiving said image signal and determining motion vectors in said image;

sound input means for inputting audio signals representing sounds generated by said members of such audience;

audio determining means responsive to said audio signals to determine a sound state of said audience;

individual state detection means for detecting individual load conditions of the members of the audience, thereby representing individual response states of the members of said audience;

auxiliary information means for supplying auxiliary information indicating whether the content currently is displayed and, if so, whether said content is video or audio content and, if video content, said auxiliary information is indicative of a scene in said video content;

determination means for determining an audience response on the basis of ~~the detected overall state of said audience~~ said determined motion vectors, said determined sound state of said audience, the detected load conditions of said members, and said supplied auxiliary information,

wherein said determination means for determining an audience response comprises an audience state determination unit for estimating if a majority of said audience is intently watching or listening to said content, for estimating if a majority of said audience is clapping or singing along with the content, for estimating if a majority of said audience is clapping or shouting, for estimating if a majority of said audience is applauding or cheering and for estimating if a majority of said audience is standing, and for selecting the audience response as a function of said estimating; and

control means for controlling the operation of said playback means based on the audience response selected by said determination means.

8. (Original) A playback output control system according to claim 7, wherein said control means selects, on the basis of said audience response determined by said determination means, data to be played back by said playback means.

9. (Original) A playback output control system according to claim 7, wherein said control means controls, on the basis of said audience response determined by said determination means, signal processing on the data played back by said playback means.

10. (Previously Presented) A playback output control system according to claim 7, wherein said overall state detection means takes an image of said audience and detects the overall bodily state of said audience based on the image.

11. (Previously Presented) A playback output control system according to claim 10, further comprising reduction means for reducing the effect of video data played back by and output from said playback means, wherein said overall state detection means detects the overall bodily state of said audience by reducing the effect of said video data on said image of said audience.

12. (Previously Presented) A playback output control system according to claim 7, wherein said overall state detection means detects the overall state of said audience by collecting sounds emitted by the audience.

13. (Previously Presented) A playback output control system according to claim 12, further comprising reduction means for reducing the effect of sound data played back and output by said playback means, wherein overall state detection means detects the overall state of the audience by reducing the effect of said sound data on the collected sounds emitted by said audience.

14. (Original) A playback output control system according to claim 12, wherein said overall state detection means detects the overall state of the audience by comparing the collected sounds with a reference sound level.

15. (Original) A playback output control system according to claim 14, further comprising varying means for varying said reference sound level on the basis of the audience size.

16. (Original) A playback output control system according to claim 12, further comprising a filter which passes a predetermined audio band, wherein said overall state determination means detects the overall state of the audience based on the sound passed through said filter.

17. (Previously Presented) A playback output control system according to claim 7, wherein the load condition detected by said individual state detection means is a load applied to each of the audience's seats.

18. (Canceled)

19. (Previously Presented) A playback output control system according to claim 7, wherein the load condition detected by said individual state detection means is a stepping force provided by each member of the audience.

20. (Original) A playback output control system according to claim 19, wherein said individual state detection means comprises:
first stepping force detection means for detecting a stepping force provided by the left foot of each member of the audience; and
second stepping force detection means for detecting a stepping force provided by the right foot of each member of the audience.

21. (Currently Amended) An audience response determination method for determining an audience response to displayed content, comprising the steps of:

~~producing an image of members of said audience and detecting motion vectors as a function of movement of individual members in said image, information indicative of a respective one of plural response states of said individual members and load information indicative of a respective response load condition of said individual members, thereby estimating an overall response state of an audience;~~

inputting image signals representing an image of members of said audience;

receiving said image signal and determining motion vectors in said image;

inputting audio signals representing sounds generated by said members of such audience;

determining a sound state of said audience in response to said inputted audio signals;

detecting individual load conditions of the members of the audience, thereby representing individual response states of the members of said audience;

supplying auxiliary information indicating whether the content currently is displayed and, if so, whether said content is video or audio content and, if video content, said auxiliary information is indicative of a scene in said video content;

determining the audience response based on ~~the detected overall state of said audience~~ said determined motion vectors, said determined sound state of said audience, the detected load conditions of the members of said audience, and said supplied auxiliary information, and

wherein the audience response is determined by estimating if a majority of said audience is intently watching or listening to said content, by estimating if a majority of said audience is clapping or singing along with the content, by estimating if a majority of said audience is clapping or shouting, by estimating if a majority of said audience is applauding or cheering and for estimating if a majority of said audience is standing, and by selecting the audience response as a function of said estimating.

22. (Currently Amended) A playback output control method for controlling a playback output, comprising the steps of:

~~producing an image of members of said audience and detecting motion vectors as a function of movement of individual members in said image, information indicative of a respective one of plural response states of said individual members and load information indicative of a respective response load condition of said individual members, thereby estimating an overall response state of an audience;~~

inputting image signals representing an image of members of said audience;

receiving said image signal and determining motion vectors in said image;

inputting audio signals representing sounds generated by said members of such audience;
determining a sound state of said audience in response to said inputted audio signals;
detecting individual load conditions of members of the audience, thereby representing
individual response states of the members of said audience;
supplying auxiliary information indicating whether content currently is being played back
and, if so, whether said content is video or audio content and, if video content, said auxiliary
information is indicative of a scene in said video content;
determining an audience response based on ~~the detected overall state of said audience~~
said determined motion vectors, said determined sound state of said audience, the detected load
conditions of the members of said audience, and said supplied auxiliary information,
wherein the audience response is determined by estimating if a majority of said
audience response is intently watching or listening to said content, by estimating if a majority of
said audience is clapping or singing along with the content, by estimating if a majority of said
audience is clapping or shouting, by estimating if a majority of said audience is applauding or
cheering and for estimating if a majority of said audience is standing, and by selecting the
audience response as a function of said estimating,
and
controlling the playback operation of data to be seen or heard by said audience based on
the audience response that is selected.

23. (Currently Amended) A ~~data~~ computer readable recording medium ~~recording~~
storing a processing program to control of processor to perform the method comprising the steps
of:

producing an image of members of said audience and detecting motion vectors as a function of movement of individual members in said image, information indicative of a respective one of plural response states of said individual members and load information indicative of a respective response load condition of said individual members, thereby estimating an overall response state of an audience;

inputting image signals representing an image of members of said audience;

receiving said image signal and determining motion vectors in said image;

inputting audio signals representing sounds generated by said members of such audience;

determining a sound state of said audience in response to said inputted audio signals;

detecting individual load conditions of the members of the audience, thereby representing individual response states of the members of said audience;

supplying auxiliary information indicating whether content currently is being played back and, if so, whether said content is video or audio content and, if video content, said auxiliary information is indicative of a scene in said video content;

determining an audience response based on ~~the detected overall state of said audience~~ said determined motion vectors, said determined sound state of said audience, the detected load conditions of the members of said audience, and said supplied auxiliary information, and

wherein the audience response is determined by estimating if a majority of said audience is intently watching or listening to said content, by estimating if a majority of said audience is clapping or singing along with the content, by estimating if a majority of said audience is clapping or shouting, by estimating if a majority of said audience is applauding or cheering and for estimating if a majority of said audience is standing, and by selecting the audience response as a function of said estimating .

24. (Currently Amended) A ~~data-computer readable recording medium recording~~ storing a processing program to control of processor to perform the method comprising the steps of:

~~producing an image of members of said audience and detecting motion vectors as a function of movement of individual members in said image, information indicative of a respective one of plural response states of said individual members and load information indicative of a respective response load condition of said individual members, thereby estimating an overall response state of an audience;~~

inputting image signals representing an image of members of said audience;

receiving said image signal and determining motion vectors in said image;

inputting audio signals representing sounds generated by said members of such audience;

determining a sound state of said audience in response to said inputted audio signals;

detecting individual load conditions of members of the audience, thereby representing individual response states of the members of said audience;

supplying auxiliary information indicating whether content is currently played back and, if so, whether said content is video or audio content and, if video content, said auxiliary information is indicative of a scene in said video content;

determining an audience response based on ~~the detected overall state of said audience~~ said determined motion vectors, said determined sound state of said audience, the detected load conditions of the members of said audience, and said supplied auxiliary information,

wherein the audience response is determined by estimating if a majority of said audience response is intently watching or listening to said content, by estimating if a majority of said audience is clapping or singing along with the content, by estimating if a majority of said audience is clapping or shouting, by estimating if a majority of said audience is applauding or

cheering and for estimating if a majority of said audience is standing, and by selecting the audience response as a function of said estimating, and

controlling a playback operation of data to be seen or heard by said audience based on the audience response that is selected.

25. (Currently Amended) An audience response determination apparatus for determining an audience response to displayed content, comprising:

~~overall state detection means for detecting the overall state of an audience;~~

image input means for inputting image signals representing an image of members of said audience;

motion vector determining means for receiving said image signal and determining motion vectors in said image;

sound input means for inputting audio signals representing sounds generated by said members of such audience;

audio determining means responsive to said audio signals to determine a sound state of said audience;

individual state detection means for detecting individual load conditions of the members of the audience, thereby representing the individual states of the members of the audience;

auxiliary information means for supplying auxiliary information indicating the content currently displayed;

determination means for determining the audience response on the basis of ~~the detected overall state of said audience~~ said determined motion vectors, said determined sound state of said audience, the detected load conditions of said members, and said supplied auxiliary information, and

wherein said determination means for determining the audience response comprises an audience state determination unit (i) for estimating whether most of the members of the audience are intently watching or listening to the content, (ii) for estimating whether most of the members of the audience are clapping their hands or singing along with the sound of the content, (iii) for estimating whether most of the members of the audience are clapping their hands or shouting, (iv) for estimating whether most of the members of the audience are applauding or cheering, (v) for estimating whether most of the members of the audience are standing and for selecting the audience response as a function of said estimating.